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GEOLOGICAL REPORT

on the

COPPERHILL PROPERTY

Grouse Mountain
Omineca Mining Division
British Columbia

for

SWIFT MINERALS LTD.

by

N.C. CARTER, PH.D. P.ENG.
January 22,1990

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TABLE OF CONTENTS

List of Figures

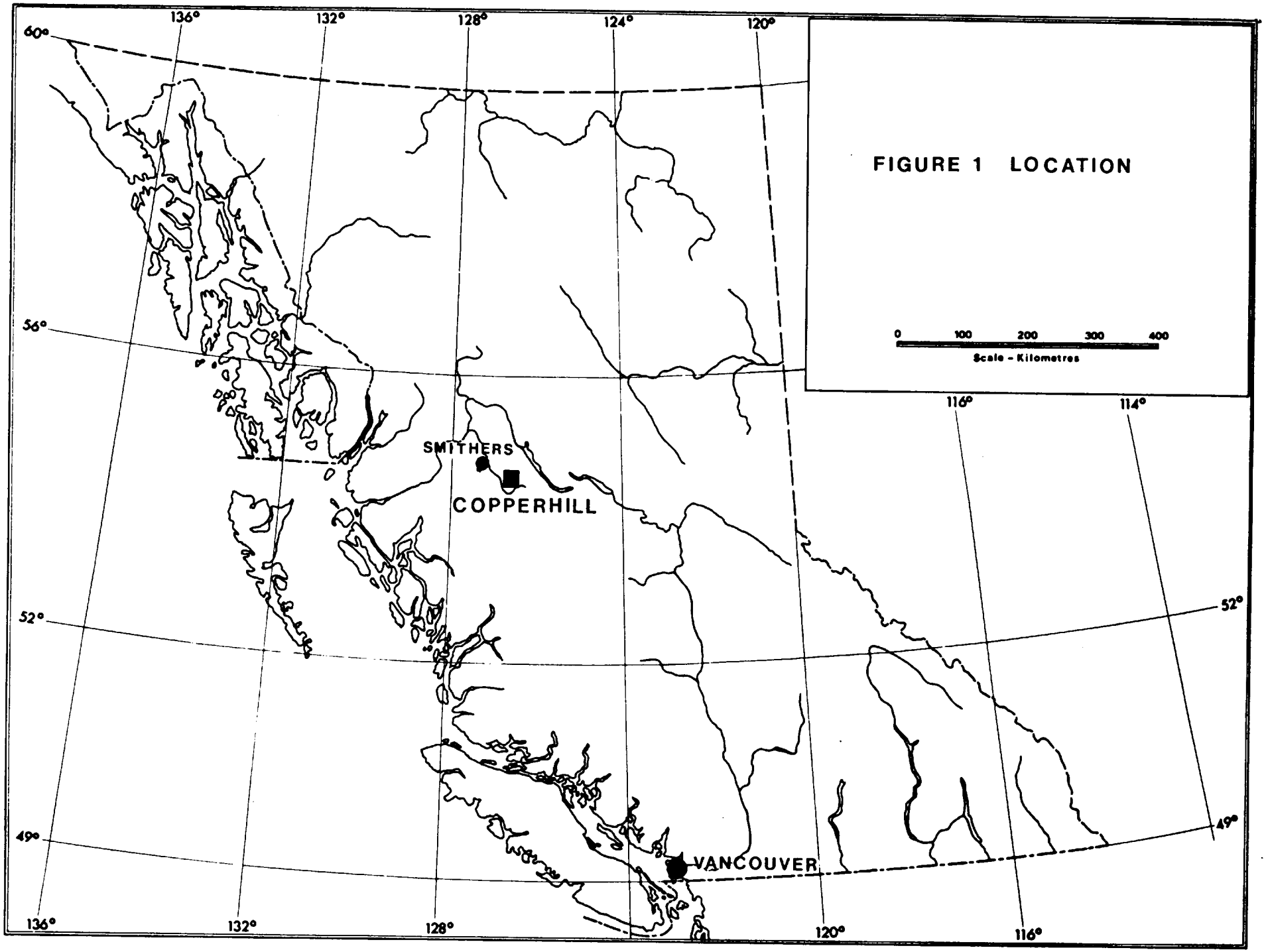
FIGURE 1 LOCATION
0 100 200 300 400
Scale - Kilometres
136°
132°
128°
124°
120°
116°
114°
60°
56°
52°
49°
SMITHERS
COPPERHILL
VANCOUVER

SUMMARY

Swift Minerals Ltd. has entered into an agreement for the purpose of carrying out exploration work on the Copperhill copper-zinc-silver property situated on Grouse Mountain southeast of Smithers in the Omineca Mining Division.

Mineralized zones on the Copperhill property consist of veins, fissures and breccia fillings of fine-grained sphalerite and chalcopyrite which trend east-northeast and dip steeply north. These are developed in a Jurassic sedimentary sequence which also strikes east-northeast, but dips gently south. Previous exploration work on the property has outlined a mineral inventory of about 300,000 tons of low grade copper,silver and zinc in one of the zones and has identified numerous other zones which warrant additional work.

A two phase program of exploration work is recommended. Phase I is recommended to include additional drilling of one of the known zones,which apparently increases in width with depth, at an estimated cost of $200,000. Contingent on results of Phase I work, a Phase II program would consist of additional diamond drilling and surface work in lesser known areas of the property.

INTRODUCTION

Swift Minerals Ltd. has concluded an agreement with Ramm Venture Corporation whereby Swift can acquire a 50% interest in the Copperhill property situated on Grouse Mountain southeast of Smithers in west-central British Columbia.

This report, prepared at the request of Swift Minerals Ltd., is based on a review of exploration work conducted on the property by Ramm Venture and Teck Explorations Limited between 1980 and 1984 and on a review of various published reports and maps.

The writer has examined mineral showings on and near Grouse Mountain on a number of occasions over the past 20 years.

LOCATION AND ACCESS

The Copperhill property is situated 40 km southeast of Smithers in west-central British Columbia (Figure 1).

Mineral claims comprising the property are located near the summit and the west flank of Grouse Mountain immediately east of highway 16 (Figure 2). The geographic centre of the property is at latitude 54 33' North and longitude 125 45' West in NTS map-area 93L/10.

The property is well located with respect to existing infrastructure. Good access to most parts of the property is

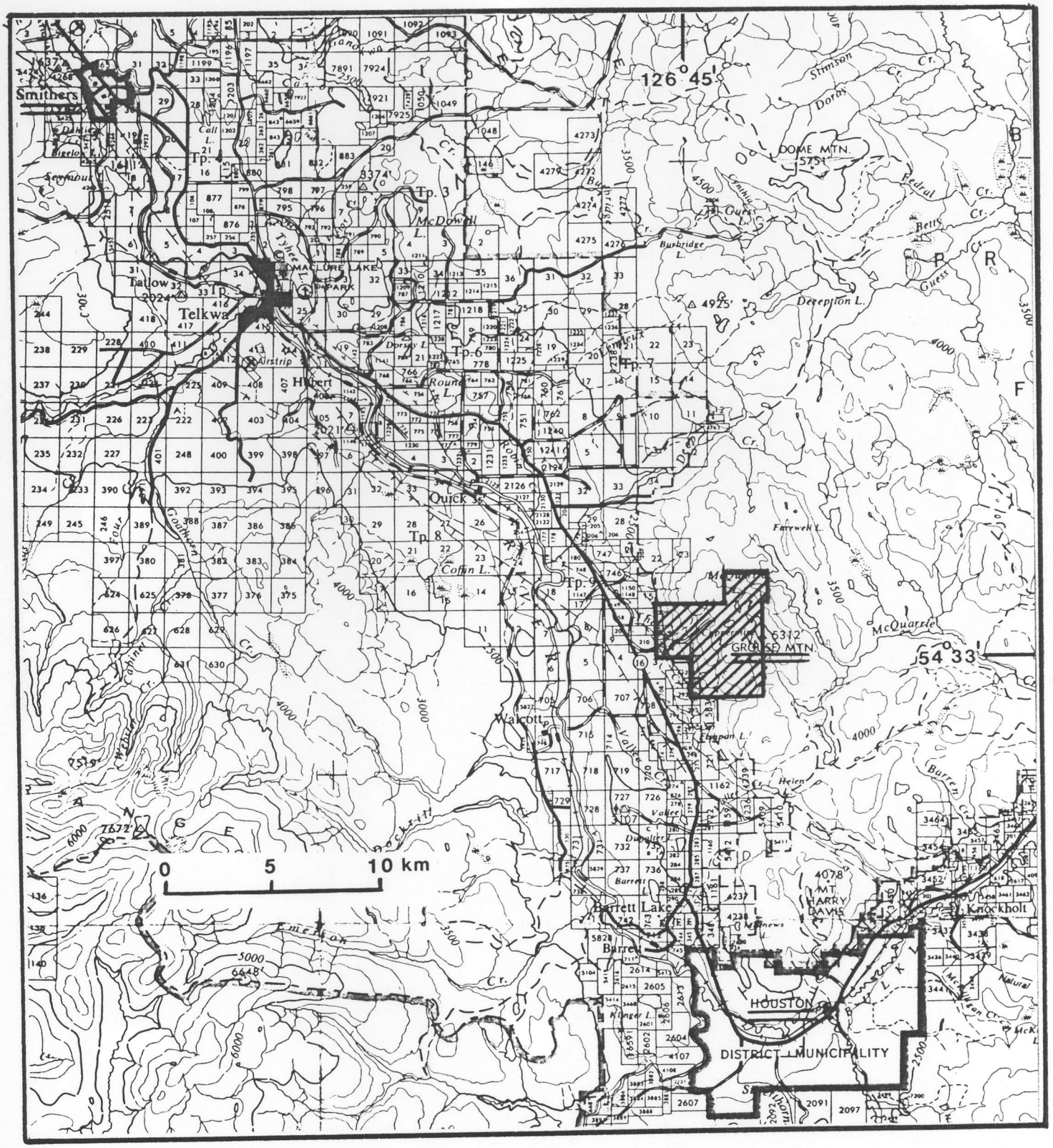

FIGURE 2 - LOCATION - COPPERHILL PROPERTY

afforded by secondary and tote roads from highway 16.

MINERAL PROPERTY

The Copperhill property consists of 9 Crown granted mineral claims and 7 Modified Grid mineral claims which include 86 mineral claim units in the Omineca Mining Division (Figure 3). Details of the mineral claims are as follows:

Claim Name	Units	Record Number	Date of Record
Lakeview	-	Lot 6284	N/A
Mayflower	-	Lot 6471	N/A
Copper Crown	-	Lot 6472	N/A
Eureka	-	Lot 6473	N/A
Ruby	-	Lot 6474	N/A
Grandview	-	Lot 6475	N/A
Cariboo	-	Lot 6476	N/A
Lower	-	Lot 6477	N/A
Maisie	-	Lot 7254	N/A
Grouse Mountain	20	2561	March 7,1981
Art	18	4522	January 8,1982
Art 2	4	4523	" "
Nigel	12	5071	March 31,1983
Tom 1	8	5722	August 25,1983
Tom 2	4	5723	" "
Troy	20	11324	December 16,1989

PHYSICAL FEATURES

Grouse Mountain is near the northwest margin of the Nechako Plateau. The majority of the mineral claims comprising the Copperhill property cover a plateau -like surface featuring several small lakes immediately west of the the summit of Grouse Mountain at 1620 metres elevation.

Tree line extends to about 1430 metres elevation but much

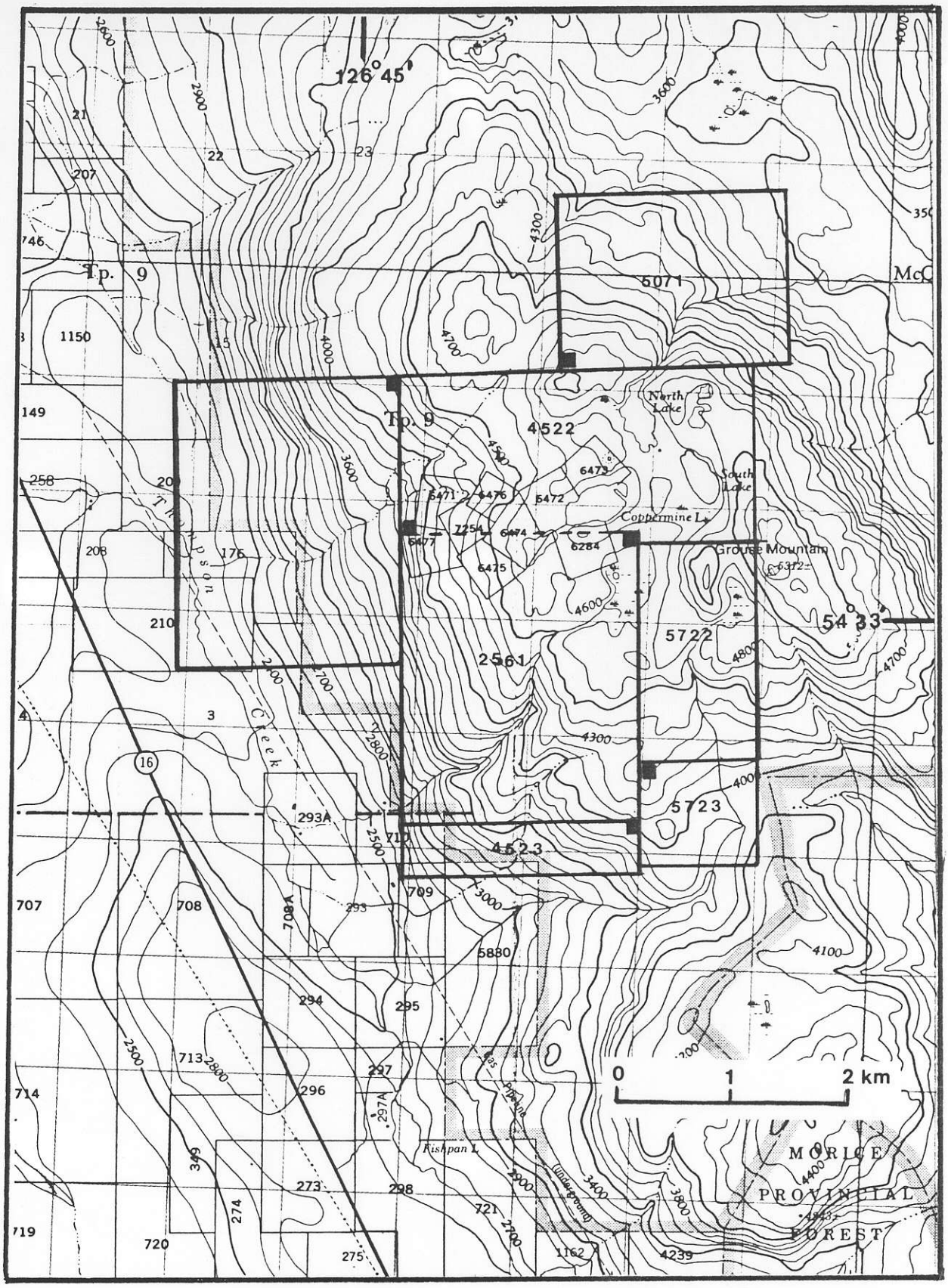

FIGURE 3 – COPPERHILL MINERAL CLAIMS

of the claims area includes fairly open country. Bedrock is fairly well exposed in the plateau area and on the moderately steep western and southern slopes of Grouse Mountain (Figure 3).

HISTORY

Copper-zinc-silver mineralization was discovered near the summit of Grouse Mountain in 1914. Considerable exploration work between 1916 and 1929 included 1200 metres of lateral and vertical underground development, principally on two of the mineralized zones.

An aggressive program, undertaken by Copper Ridge Silver Zinc Mines Limited and Transcontinental Resources Limited in 1951 and 1952, consisted of rehabilitating underground workings and 4200 metres of surface and underground diamond drilling of several known mineralized zones.

Prospecting, geological mapping, geophysical surveys and bulldozer trenching in the area of known copper-zinc-silver zones was carried out by several firms between 1964 and 1977.

In 1979, the Crown granted mineral claims were acquired by Ramm Venture Corporation. Work in 1980 and 1981 included VLF-EM surveys and 1282 metres of diamond drilling in 14 holes. Teck Explorations Limited entered into an agreement with Ramm in 1984 and completed detailed and reconnaissance

VLF-EM surveys, soil and rock geochemistry and 1896 metres of diamond drilling in 19 holes between April and October of that year. Geological mapping and soil geochemistry within the area of the present Troy claim was also undertaken in 1984 on behalf of Bren-Mar Resources Ltd.

REGIONAL GEOLOGICAL SETTING AND MINERAL DEPOSITS

The Smithers - Grouse Mountain - Houston area in west-central British Columbia is part of the Intermontane tectonic belt. Lower and Middle Jurassic Hazelton Group calc-alkaline volcanics and sedimentary rocks of Stikine terrane are the oldest exposed in this area and these are intruded by coeval granitic rocks of the Topley intrusions and by late Cretaceous and early Tertiary granitic plutons.

The older Topley intrusions occur along the axis of the Skeena Arch, a major northeast trending transverse structure which marks the southern limits of the Bowser Basin and its contained clastic sedimentary rocks of middle and late Jurassic age. Skeena Arch also marks the northern limits of areally extensive,early to mid Tertiary continental volcanic rocks which overlie older Mesozoic assemblages.

The area is well known for the number and variety of mineral deposit types. These include porphyry copper and/or molybdenum deposits associated with late Cretaceous and early

Tertiary granitic plutons, vein deposits containing base and precious metals developed in Mesozoic volcanic and sedimentary rocks, disseminated copper occurrences in Lower Jurassic volcanic rocks and deposits with volcanogenic massive sulfide affinities in Jurassic and early Cretaceous sequences.

Examplee of the latter deposit type include Equity Silver mine south of Houston, Topley Richfield north of Topley, the RED and Fireweed properties near Babine Lake and the mineralized zones on Grouse Mountain. While all of these are clearly transgressive relative to enclosing host rocks, they are stratabound in a gross sense and may be products of remobilization of original volcanogenic deposits.

PROPERTY GEOLOGY AND MINERALIZATION

Grouse Mountain is underlain by Lower and Middle Jurassic volcanic and sedimentary rocks of the Hazelton Group. The oldest sequence is comprised of maroon to green andesitic pyroclastic rocks, including tuff breccias and lapilli tuffs, and lesser flows typical of the basal part of the Hazelton Group. These fragmental rocks are overlain in the plateau area of Grouse Mountain by an east-northeast striking, gently south dipping marine sequence of grey to green tuffs and siltstones which are fossiliferous in part.

The layered rocks are cut by a variety of Tertiary dykes and irregular intrusive bodies which generally have a north to northwest strike and dip steeply west. Most conspicuous of these (Church,1972) is a 100 -200 metre wide dyke of dark grey feldspar porhyry containing bladed feldspar phenocrysts up to 4 cm in length and which trends northwesterly along the break in slope immediately west of the plateau and Coppermine Lake (Figure 4). The dyke consists of two intrusive phases with a younger phase containing smaller feldspar phenocrysts intruding the coarser variety. Other intrusive rocks in the plateau area, of similar age, include fine-grained subporphyritic monzonite and fine-grained basic dykes.

Mineral showings containing copper-zinc-silver mineralization, are situated around the three small lakes in the plateau area where they occur as breccia and fissure fillings and veins in the sedimentary sequence. The several known zones (Figure 4) trend northeast to east-northeast, crudely conformable to the strike of the sedimentary host rocks, but hey dip steeply north and are clearly transgressive.

Mineralization consists of fine-grained sphalerite and chalcopyrite in veins, breccia and fissure fillings in which the overall ratio of zinc to copper is 8 or 10 to 1. Some of the more massive mineralization features banding imparted by

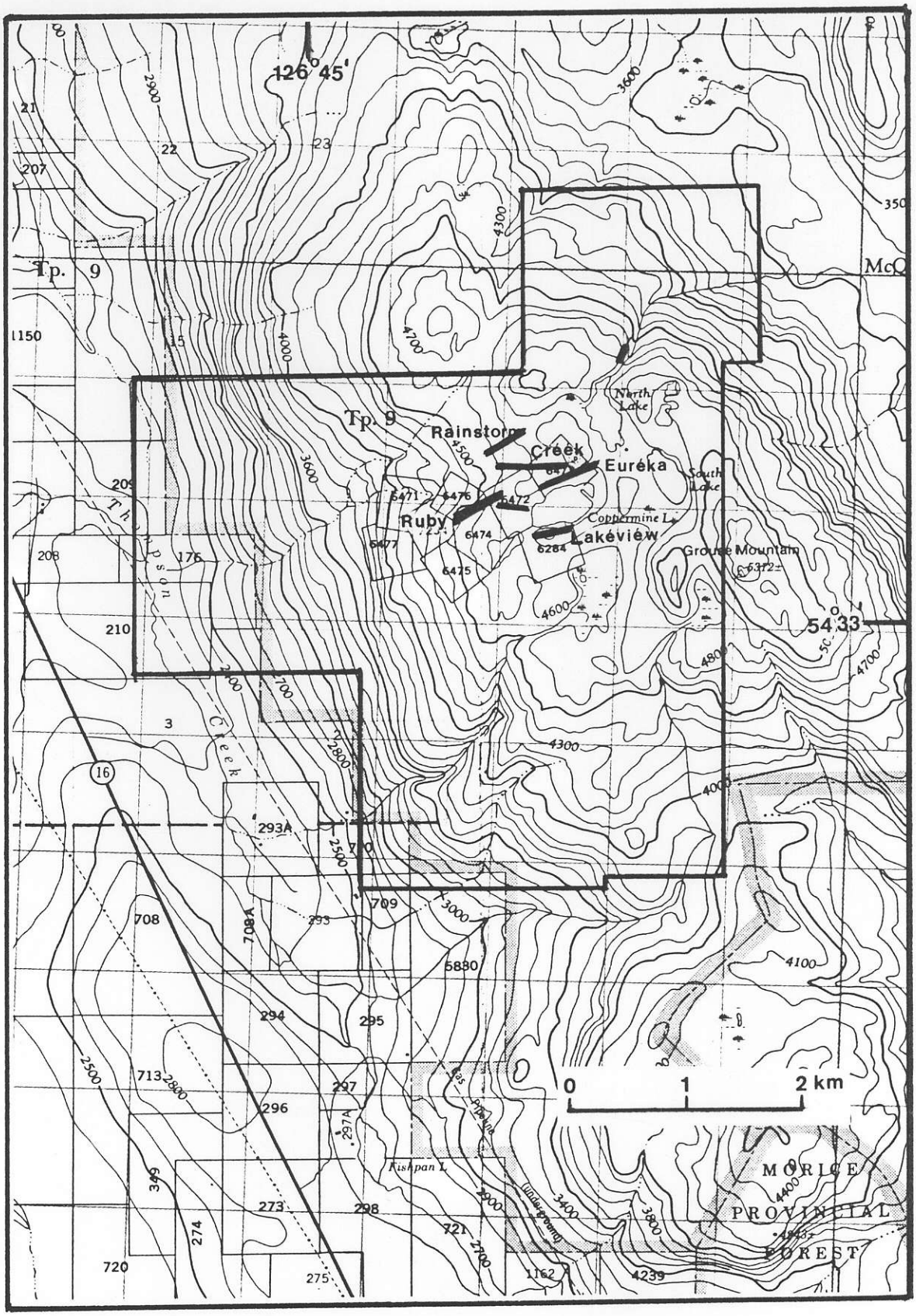

FIGURE 4 COPPERHILL MINERAL ZONES

streaky chalcopyrite in fine-grained sphalerite.

Ruby - Copper Crown Zones

Most past work was directed to the Ruby zone (Figure 4) and an eastern, possibly faulted extension known as the Copper Crown zone.Both of these have been partially developed by two adit levels, raises and a shallow shaft. Considerable diamond drilling was undertaken on the Ruby zone in the early 1950's.

The Ruby zone as described by Black(1951) is a multi-vein system which strikes northeasterly and dips 70 degrees to the northwest. As intersected in drill holes, the zone averages 4.5 metres in width over a strke length of 230 metres and a down dip interval of 53 metres. Typically, the zone consists of numerous, parallel veins and fissures ranging in width from 2.5 to 15 cm. Sulfide minerals make up most of the vein material which also includes some quartz and carbonate. Wallrocks also contain some disseminated sphalerite and chalcopyrite.

A number of grade and tonnage estimates have been prepared for the Ruby zone and these have been compiled by Borovic(1984). Estimates range from 232,900 tons grading 0.73 oz/ton silver, 0.31% copper and 4.25% zinc to 323,500 tons grading 0.88 oz/ton silver, 0.38% copper and 4.23% zinc.

This mineral inventory is contained in three southwest

plunging shoots within the plane of the zone. The most southwesterly of these is crosscut by the large post-mineral dyke described earlier. Available data suggests that other than a few old drill holes, little work has been done to search for a possible continuation of the Ruby zone beyond the dyke to the southwest. Potential for such a continuation is enhanced by soil sampling 750 metres southwest of and on trend with the Ruby zone which indicates a northeast trending zone with anomalous zinc values (Peto,1984).

The Copper Crown zone may represent a faulted extension of the northeast part of the Ruby zone. This zone, which is more chalcopyrite-rich, includes a number of east-striking, parallel sulfide lenses and fracture fillings over a maximum width of 10 metres on surface and an apparent strike length of 200 metres. Previous underground work indicated a pinching out of the zones at depth. Several inclined drill holes, put down to to test this zone in in 1981 and 1984, included three in the western 50 metres of strike length with copper grades in excess of 1%, silver to 1.5 oz/ton and zinc in the 0.30% range over core lengths of 5 to 15 metres and at vertical depths of 40 metres (Borovic,1984;Peto,1984). Other holes yielded lower values.

VLF-EM surveys in 1981 and 1984 demonstrated good response over the Ruby and Copper Crown zones and indicated a

potential eastern extension along the north shore of Coppermine Lake. Several inclined holes in this area in 1981 and 1984 indicated grades of less than 1% combined copper-zinc and about 1 oz/ton silver over core lengths of 2-4 metres.

Creek - Eureka Zones

The Creek and Eureka zones are north of Coppermine Lake (Figure 4) and both yield a good VLF-EM response (Peto,1984). The Eureka zone, partially explored by an old adit, strikes east-northeast, dips steeply north and was traced by surface cuts over a 100 metre strike length. Reported widths of better grade mineralization, principally in the form of chalcopyrite, range up to 3 metres. Seven inclined drill holes (Peto,1984) yielded generally low copper zinc and silver grades, the best being 1 metre of 3% copper and 1.2 oz/ton silver.

One of two holes in the central part of the Creek zone intersected 12 metres of low grade copper-zinc-silver mineralization which included 3 metres of 0.9% copper, 1.87% zinc and 1.14 oz/ton silver; two holes east and west intersected slightly better grades but only over 1 metre core lengths.

Rainstorm Zone

The Rainstrom zone, north of the previous two (Figure

4), and just south of the contact between the sedimentary sequence and the underlying fragmental andesites, has been traced on surface over a potential east-northeast strike length of 500 metres. This zone, which dips moderately north, consists of parallel 0.6 metre wide veins containing chalcopyrite and sphalerite over cumulative widths of 7 metres. Some cherty lenses were noted adjacent to some of the mineralized sections by the writer in 1970.

Two inclined, widely spaced drill holes intersected grades of 2.27 - 6.13% zinc over 1.2 - 3.3 metre lengths which in both cases are part of lower grade mineralized sections over core lengths of 12 - 22.5 metres (Peto,1984). Significantly, these wider sections are developed in fragmental andesites which underlie the tuff - sedimentary unit and in which the mineralized structures are appreciably narrower.

Hidden Treasure Zone

The Hidden Treasure zone, situated northeast of North Lake (Figure 4), may represent an extension of the Rainstorm zone. Galena is present in this zone in addition to chalcopyrite, sphalerite and pyrite and all occur in a northeast-striking 0.6 - 2 metre wide shear zone in the sedimentary sequence near its contact with underlying fragmental andesites (Church,1972).

Lakeview - Schorn Zones

These parallel zones, both striking north-northeast, are situated on the south shore of Coppermine Lake (Figure 4). The Schorn, the westernmost of the two, is poorly exposed in a number of pits and trenches over a strike length of 65 metres between the southwest shore of Coppermine Lake and a northwest striking fine-grained basic dyke. Very fine-grained sphalerite and chalcopyrite occur in parallel, closely spaced fracture planes in fossiliferous tuffs and siltstones. Some of the fossils have been replaced by sulfide minerals. Three 1951 drill holes did not yield encouraging results.

The Lakeview zone, 250 metres east, includes two parallel quartz veins and stringer zones which attain a maximum width of about 3 metres and locally contain 18% zinc, 1.7% copper and 4 oz/ton silver (Church,1972). Fourteen drill holes over a potential strike length of 120 metres indicated that these zones were disrupted by faulting (Black,1951).

Other Zones

Soil and rock chip sampling near the south boundary of the Nigel claim 650 metres east of the north end of North Lake (Figure 4) yielded anomalous copper, zinc and silver values. A RADEM survey indicated a northeast trending zone and samples from several old open cuts in this area yielded values of up to 20% zinc, 10.5% copper, 4.6 oz/ton silver and

0.042 oz/ton gold (Peto,1984). A 40 metre wide northwest-striking felsic dyke is 150 metres north of the open cuts. Two 1984 drill holes intersected chalcopyrite and sphalerite in quartz veinlets but grades did not exceed 1% combined copper-zinc and gold values were very low.

Two contiguous soil samples on the Art 2 mineral claim on the south slope of Grouse Mountain (Figure 3) contained anomalous zinc, silver, lead and copper values. These are apparently along a contact between granitic rocks and hornfelsed sediments (Peto,1984) and may represent an environment similar to that on the adjacent Mineral Hill porphyry molybdenum(copper) property.

Previous soil sampling within the area of the present Troy mineral claim (Holland,1984) disclosed the presence of three coincident, northeast trending copper-zinc-silver anomalies. While one of these may be the product of down slope migration from known mineral zones, no follow-up work has been done.

Discussion

Known zones of mineralization on the Copperhill property, as described in this section, are clearly epigenetic but their mineralogy and geological setting suggests that they may be products of remobilization of original volcanogenic deposits.

There are a number of similarities between the Grouse Mountain mineralization and the Equity Silver deposits south of Houston. The latter have been variously described as being remobilized from volcanogenic massive sulfides or the end products of hydrothermal emanations from either granitic or gabbroic stocks. The Equity silver-copper-gold deposits are developed between a small, copper-molybdenum bearing granite stock on the west and a gabbro plug on the east, both of Tertiary (Eocene) age. The gabbro and related basic dykes are clearly post-mineral in age and have caused some recrystallization of the sulfide minerals and probably some remobilization.

Significantly, the gabbro adjacent to the Equity deposits is compositionally similar to the large porphyry dyke on the Copperhill property (Church,1972) which also features post-mineral relationships. A granitic body has been reported on the Art 2 mineral claim on the south slope of Grouse Mountain and a felsic dyke in the south part of the Nigel claim suggests the presence of a granitic body at depth.

Volcanic rocks exposed near the summit of Grouse Mountain are subaerial, but are part of the Babine Shelf facies of the Lower Jurassic Telkwa Formation (Tipper and Richards,1976) which is principally a submarine volcanic sequence. Submarine volcanic rocks may underlie those seen on

surface.

CONCLUSIONS AND RECOMMENDATIONS

Several zones of copper-zinc-silver mineralization have been identified on the Copperhill property near the summit of Grouse Mountain. The east-northeast trend of these zones is crudely conformable to the strike of the host sedimentary sequence which dips gently to the south. The mineral zones, however, dip steeply north and consequently are transgressive. Typically, the zones consist of narrow, parallel breccia and fissure fillings and veins containing fine-grained sphalerite and chalcopyrite. Cumulative widths may range up to 5 or more metres and most of the known zones have demonstrated strike lengths of several hundred metres.

One of the zones, the Rainstorm, has been tested by only two drill holes, both of which indicated a significant increase in the width of the mineralized zone within more competent fragmental andesites which underlie the sedimentary sequence. Additional drilling to depth and along strike is warranted for this zone.

Other areas which merit additional investigation include a potential southwest extension of the Ruby zone where previous underground development and drilling indicates a mineral inventory of between 200,000 and 300,000 tons grading

0.80 oz/ton silver, 0.35% copper and 4.25% zinc. This zone is cut by a post-mineral porphryry dyke near its known southwestern limits and a few drill holes indicate copper-zinc mineralization beyond the dyke. Limited soil sampling several hundred metres to the southwest and on trend with the Ruby zone yielded anomalous zinc values.

VLF-EM surveys have proven to be useful in reflecting the known zones and indicating possible extensions to them. One VLF-EM anomaly that has been only partially tested by one drill hole extends in a northeasterly direction through Coppermine Lake. In view of the several known zones on the north and south shores of the lake, this target requires further investigation.

Additional surface work on the Copperhill property should be undertaken when conditions permit. Prior to this, a topographic base map should be prepared for control. Several VLF-EM anomalies require further investigation, preferably employing more sophistcated electromagnetic techniques. Copper-silver-zinc anomalies in soils west of the known mineralized zones on the Troy claim should also be checked.

A two phase program is recommended with the first phase to consist of additional drilling of the Rainstorm zone at an estimated cost of $200,000. Contingent on encouraging results being obtained from first phase work, a Phase II

program is recommended to include additional diamond drilling of the Rainstorm and other zones and surface geological, geochemical and geophysical surveys in lesser known areas of the property.

COST ESTIMATE

Phase I

Diamond Drilling - 1800 metres @ $80/metre		$144,000.00
Supervision, reporting		$20,000.00
Sample analyses		$10,000.00
Living and travel expenses		$7,500.00
Contingencies		$18,500.00
	Total	$200,000.00

Phase II

Diamond Drilling - 5000 metres @ $80/metre		$400,000.00
Supervision, reporting		$40,000.00
Sample analyses		$25,000.00
Surface surveys-geophysics,soil and rock geochemistry,geological mapping		$25,000.00
Living and travel expenses		$25,000.00
Contingencies		$85,000.00
	Total	$600,000.00

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CERTIFICATE

I, NICHOLAS C. CARTER of Victoria, British Columbia, do hereby certify that:

1. I am a Consulting Geologist registered with the Association of Professional Engineers of British Columbia since 1966.

2. I am a graduate of the University of New Brunswick with B.Sc.(1960), Michigan Technological University with M.S.(1962) and the University of British Columbia with Ph.D.(1974).

3. I have practised my profession in eastern and western Canada and in parts of the United States for more than 25 years.

4. The foregoing report is based on the author's previous examinations of the Grouse Mountain area and om published and unpublished material relating to the geological setting and previous exploration work on the Copperhill property.

5. I have no interest, direct or indirect, in the mineral claims comprising the Copperhill property or in the securities of Swift Minerals Ltd.

6. Permission is hereby granted to Swift Minerals Ltd. to use this report in support of any filings with the British Columbia Securities Commission and the Vancouver Stock Exchange.

N.C. Carter, Ph.D. P.Eng.

Victoria,B.C.
January 22,1990